

**Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, DC 20554**

In the Matter of	)	
	)	
Digital Audio Broadcasting Systems	)	MM Docket No. 99-325
And Their Impact On the Terrestrial Radio	)	
Broadcast Service	)	

To: The Commission

**COMMENTS OF NATIONAL PUBLIC RADIO, INC.**

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**Comments of National Public Radio, Inc.**

**Introduction and Summary**

Pursuant to Section 1.415 of the Commission's Rules, 47 C.F.R. § 1.415, National Public Radio, Inc. ("NPR") hereby submits its Comments in response to the Commission's Public Notice regarding the iBiquity Digital Corporation ("iBiquity") IBOC FM system.<sup>1</sup>

NPR is a non-profit membership corporation which produces and distributes noncommercial educational programming through more than 600 public radio stations nationwide. In addition to broadcasting award winning NPR programming, including *All Things Considered*<sup>®</sup>, *Morning Edition*<sup>®</sup>, *Talk Of The Nation*<sup>®</sup>, and *Performance Today*<sup>®</sup>, NPR's Member stations originate significant amounts of news, informational, and cultural programming. NPR also operates the Public Radio Satellite Interconnection System and provides representation and other services to its Member stations.

NPR has long been an advocate of terrestrial digital radio, not only because of its promise

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<sup>1</sup> Public Notice, Comment Sought on National Radio Systems Committee DAB Subcommittee's "Evaluation of the Ibiquity Digital Corporation IBOC System", MM Docket 99-325, rel. Dec. 19, 2001 [hereinafter "Public Notice"].

of greater audio fidelity and signal robustness, but more importantly because of the additional service opportunities it promises to afford. Now that the radio broadcast industry stands at the dawn of the digital radio transition, we urge the Commission to fully examine the opportunities for new program services that the iBiquity IBOC FM standard can provide.

We see the adoption of the IBOC FM system as providing a potential opportunity for important programming that serves the public interest, including

- ☛ assisted-living services, such as radio reading services for the print-impaired and radio captioning
- ☛ public safety services, such as weather alerts, traffic safety, and national security notifications
- ☛ foreign language programming
- ☛ audio-on-demand

With IBOC, these services could be made available via mass market receiver equipment. To ensure the availability of such secondary program services, it is critically important that the Commission seek the inclusion of appropriate "opportunistic data profiles" in the IBOC FM standard and the integration of this functionality in first generation IBOC-FM receivers. A demonstration of how a multiple-program-stream-per-station radio receiver might appear and function is available at [www.npr.org/impulse2](http://www.npr.org/impulse2).

In addition to the public interest inherent in new public services, the availability of such services will help foster consumer acceptance of digital radio and the deployment of new digital radio receivers. By analogy, in the case of analog FM radio, the Commission adopted program non-duplication requirements in the early 1960s to limit the simulcasting of programming on jointly licensed AM and FM stations in a given area. The Commission's efforts were

instrumental in encouraging the development of new FM radio program services, which, in turn, spurred popular demand for FM broadcasting and AM/FM receiver equipment. The clear lesson of this history is that the availability of additional program services is instrumental in seeding demand for a new radio medium.

Finally, notwithstanding the potential of IBOC, the adoption of the iBiquity IBOC FM system does not alleviate the need for new spectrum for radio broadcast use. The Commission continues to confront an overwhelming demand for spectrum by new and existing broadcasters. We believe a portion of the spectrum could be set aside for digital-only stations and for new public safety and other services. We therefore reiterate our support for the proposal set forth in the Notice of Proposed Rulemaking in this proceeding to reallocate the spectrum at 82-88 MHz to radio broadcast use as one step in satisfying the public interest in new radio service and as a necessary complement to adopting the iBiquity IBOC FM transmission standard.

**I. NPR Supports The Adoption of the iBiquity IBOC FM System Subject To Several Important Considerations, Including The Satisfactory Resolution of Interference Concerns Regarding Subsidiary Communications Services and A Commission Commitment to Affording FM Broadcasters An Opportunity To Offer Secondary Program Services**

NPR has long supported the establishment of an effective DAB transmission standard because it offers the promise of significantly improved service to the public through enhanced sound fidelity, improved robustness, new radio features, and the ability to provide enhanced auxiliary services and additional program services.<sup>2</sup> Virtually every other means of electronic

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<sup>2</sup> NPR's long-standing interest in DAB dates to the initiation of the Commission's Advanced Television proceeding, Advanced Television Systems and Their Impact on the Existing Television Broadcast Service, Notice of Inquiry, MM Docket No. 87-268, 2 FCC Rcd. 5125 (1987), in which NPR urged the Commission to consider the spectrum needs of advanced radio systems. Comments of National Public Radio, Advanced Television Systems and Their Impact on the Existing Television Broadcast Service, MM Docket No. 87-268, at 2-7, filed Nov.

mass media is transitioning to or otherwise deploying digital technology. It is therefore essential for public radio broadcasters, in particular, to be able to exploit the benefits of digital technology to further its Congressionally sanctioned, public interest mission.<sup>3</sup>

Applying the evaluative criteria the Commission identified in the Notice of Proposed Rulemaking in this proceeding,<sup>4</sup> the iBiquity IBOC FM standard appears to provide an effective means of implementing DAB. Nonetheless, we urge the Commission to consider several matters implicated by the iBiquity system.

Preliminarily, as the Public Notice properly notes, the evaluation of the iBiquity IBOC FM system by the National Radio System's Committee raised the possibility that a given FM station's IBOC operation could cause harmful interference to adjacent station subsidiary communications ("SCA") services, including those offering radio reading services. Because the Public Notice promises a subsequent opportunity to comment on the additional testing that is being conducted to assess the nature and extent of any SCA channel interference,<sup>5</sup> no specific comment is warranted at this time.

We also urge the Commission to assess the cost of implementing the iBiquity IBOC FM

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18, 1987. Since then, NPR has consistently advocated the development of a terrestrially based DAB system. See Comments of National Public Radio, Amendment of the Commission's Rules with Regard to the Establishment and Regulation of New Digital Audio Radio Services, GEN Docket 90-357, filed Nov. 13, 1990; Comments of National Public Radio, In the Matter of Digital Audio Broadcasting Systems and Their Impact on the Terrestrial Broadcast Service, MM Docket No. 99-325, 15 FCC Rcd. 1722 (1999) [hereinafter "NPR Comments"].

<sup>3</sup> See 47 U.S.C. § 396(a).

<sup>4</sup> In the Matter of Digital Audio Broadcasting Systems and Their Impact on the Terrestrial Broadcast Service, MM Docket No. 99-325, 15 FCC Rcd. 1722, at ¶¶ 20-35 (1999) [hereinafter "DAB NPRM"].

<sup>5</sup> Public Notice at 2.

system to ensure that the cost is not excessive.<sup>6</sup>

Finally, with respect to the proposed IBOC FM standard itself, the Commission should only approve the standard if the Commission also commits to using its authority and resources to assure the public a meaningful opportunity to receive additional *program* services. In the NPRM, the Commission stated its "commit[ment] to encouraging a DAB system design that would permit the flexible and dynamic development of new broadcast and non-broadcast services and features and allows broadcasters to realize specific service opportunities."<sup>7</sup> NPR agrees that flexibility is an important criteria in evaluating any proposed DAB system, and we encourage the Commission to pursue progressive regulatory policies to assure the flexible use of the iBiquity IBOC FM system to provide new and innovative program services.

While considerable attention has focused on the opportunities for datacasting services, either separate from or ancillary to a station's primary over-the-air signal, the iBiquity IBOC FM standard permits multiple program services, primarily because of improvements in audio coding technology over the last decade. Such offerings might include a primary near-CD quality program service and a secondary voice grade service. Such secondary program services could include

*public safety services*

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<sup>6</sup> The iBiquity IBOC FM system is based on propriety technology, and we understand that iBiquity intends to charge stations a license fee separate from the cost stations would pay to transmission equipment manufacturers. Noncommercial stations, in particular, have a limited pool of resources from which to fund station operations, produce and acquire programming, and engage in other related activities. In addition, statewide broadcast networks are common in public radio, and it is not clear whether each licensed facility would be assessed a separate fee or whether the fee would be recurring.

<sup>7</sup> DAB NPRM at ¶ 29.

stations, addressing local, regional, or national events or emergencies, could provide weather alerts, traffic safety, national security notifications, and other public safety services

***assisted living services***

The vast majority of radio reading services are associated with public radio stations<sup>8</sup> and the need for such services will only increase with the aging of the "baby boomer" generation due to macular degeneration, glaucoma, cataracts, and diabetic retinopathy.<sup>9</sup> A radio's front panel display might also be used to add "live captioning" capability to serve Americans affected by severe hearing loss.

***foreign language/minority communities of interest services***

A number of public radio stations, including WXPB-FM, Philadelphia, PA, currently provide foreign language services via their subcarriers. With IBOC and appropriate receiver functionality, these services could be made generally available.

***news and information services in and to currently un-served or underserved areas and populations***

Among NPR member stations, the limited availability of spectrum, combined with the limited capability of the current analog transmission standard, are the greatest obstacles to the offering of additional program services to the public. Stations simply cannot broadcast all the worthwhile programming that is available currently, but, if given the means, they could more readily offer services like Latino USA -- the only nationwide, English-language program produced from a Latino perspective -- the National Native News service, and even NPR's *All Things Considered*.

***audio-on-demand***

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<sup>8</sup> Supplemental Comments of the International Association of Audio Information Services, MM Docket 99-25, at 4 (filed August 2, 1999).

<sup>9</sup> See Desai, Pratt, Lentzner, and Robinson, "Trends in Vision and Hearing Among Older Americans" (Centers for Disease Control and Prevention Mar. 2001) *reprinted in* <http://www.seniors.gov/articles/0401/reports.html>.



A secondary channel could enable listeners to access programming matter of specific interest, such as newscasts, traffic reports, specialty business, agriculture, and other news, school closings, and the like, when the listener desires it (i.e., non-real time).

Without the Commission's direction and oversight, however, it is not clear that the expanded service capability of the proposed IBOC FM standard will result in the offering of new program services to the listening public. Indeed, because datacast business services are expected to be more lucrative and less costly to produce than new program services, one can expect datacast services to predominate. It is also unclear whether consumer electronics manufacturers will produce radio receivers capable of selecting multiple program services offered by an individual broadcast station unless they are encouraged to do so.<sup>10</sup> Indeed, iBiquity seems to believe that text-based services will define digital radio.<sup>11</sup>

While we do not diminish the potential value of text-based and other datacast services, NPR believes that digital radio, like its analog counterpart, should first and foremost serve the public's *listening* needs. Accordingly, as a regulatory matter, the transition to digital radio presents a unique opportunity to identify those areas in which critical public interest needs can be addressed by farsighted FCC technical and administrative policies. Indeed, just such a program-service enhancing perspective was brought to bear in authorizing digital television.

By way of an earlier example, such farsightedness was instrumental in the development

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<sup>10</sup> For instance, radio reading services heretofore have had to rely on a few specialty manufacturers to produce receivers that are only capable of receiving signals transmitted by a station's SCA. Because of the lack of either mass market or "high end" demand for such equipment, the receivers have generally been of inferior quality and receiver manufacturers have been unwilling to incorporate the SCA reception capability in mass market equipment.

<sup>11</sup> See <http://www.ibiquity.com/navframe.html?04content.html>.

of the secondary audio program ("SAP") component of the television aural baseband and such services as bilingual programming and closed captioning for the hearing impaired. Thus, in responding to a petition for rulemaking to use the TV aural baseband subcarrier for cuing and coordinating electronic news-gathering crews in the field, the Commission broadened the inquiry to consider other uses, including TV stereophonic sound, bilingual programming, and augmented audio for the blind.<sup>12</sup> As a result of the Commission's efforts, the SAP feature of the BTSC television audio format has evolved to provide important services to millions of Americans, including a thriving descriptive video service for the visually impaired.

It is also important to note that the implementation of digital television has offered consumers the opportunity to receive vastly improved picture quality -- through the transmission of programming in high definition -- as well as multiple streams of standard definition programming.<sup>13</sup> In the case of IBOC FM, the improvement in signal quality is not nearly as significant.<sup>14</sup> The availability of additional program services, therefore, is critical to effectuating the public interest in an IBOC digital radio conversion.

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<sup>12</sup> See In the Matter of the Use of Subcarrier Frequencies in the Aural Baseband of Television Transmitters, Second Report and Order, Docket No. 21323, 1984 FCC LEXIS 2956, 55 R.R.2d 1642, at ¶ 2 (1984).

<sup>13</sup> See In the Matter of Advanced Television Systems and Their Impact upon the Existing Television Broadcast Service, Fifth Report and Order, 12 FCC Rcd 12809, at ¶ 12 (1997) ("We believe that the use of 6 MHz channels is necessary to provide viewers and consumers the full benefits of digital television made possible by the DTV Standard, including high definition television ("HDTV"), standard definition television, and other digital services.")

<sup>14</sup> The iBiquity IBOC AM system, by comparison, appears to offer a significantly greater improvement in sound quality. While we understand that the IBOC AM system is still being refined and tested, we encourage the Commission to do whatever it can to facilitate consideration of that system once it is presented for approval.

To demonstrate how multiple program stream functionality might appear in a typical radio receiver, NPR commissioned Impulse Radio to produce a software demonstration. By visiting [www.npr.org/impulse2](http://www.npr.org/impulse2), one can download and launch the software demonstration and select between two sample program streams -- a classical music service ("FM-A") and a news and information service ("FM-B").<sup>15</sup> The iBiquity IBOC FM system under consideration enables this capability, even during the initial hybrid-mode analog/digital transition. With the Commission's guidance and the production of radio receivers capable of accessing multiple program streams, consumers would be able to benefit from such services as soon as the digital radio transition commences.

Beyond the inherent public interest in additional program services, NPR believes the availability of such services will drive consumer acceptance of digital radio and the deployment of new digital radio receivers. Indeed, it is useful to examine the Commission's efforts to promote the public acceptance of analog FM radio. Thus, in 1964, the Commission adopted program duplication limits, prohibiting FM stations from duplicating more than 50 percent of their programming from a co-owned AM station in the same local area.<sup>16</sup> One of the central objectives was to encourage consumers to buy and use FM receivers by assuring the unique

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<sup>15</sup> To launch the demonstration from [www.npr.org/impulse2](http://www.npr.org/impulse2), double click on the "npr.exe" file to download the file. Download the file to your computer's "desktop." Once the file is downloaded, click on the "npr.exe" icon on the desktop. To exit from the program, hit the ESC key twice.

To navigate the demonstration, the "3" button located to the left of "Menu" allows for scrolling through the menu options. Click on the "3" button to choose NPR A/B, Traffic or Weather. Click on "Select" or the "6" button to activate the chosen option.

<sup>16</sup> Report and Order in Docket No. 15084, 45 FCC 1515 (1964).

availability of programming services on the FM dial. Twenty years later, the Commission repealed the rule, finding that, given the success of FM broadcasting, "it is no longer necessary to retain this rule for the purpose of promoting FM development."<sup>17</sup>

As this experience demonstrates, the Commission can play an important role in the success of a new medium. Assuming, after evaluating all the competing factors and the remaining testing, the Commission approves the iBiquity IBOC FM system, it should not be a wait-and-see, "toe in the water" authorization. Rather, the over-riding objective should be to maximize the number and type of broadcast offerings and consumer receiver options, just as was the case in the growth of the FM service itself and, more recently, the authorization of digital television.

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<sup>17</sup> In the Matter of Amendment of Section 73.242 of the Commission's Rules and Regulations in Regard to AM-FM Program Duplication, Notice of Proposed Rulemaking, MM Docket No. 85-357, 1985 FCC LEXIS 2245 at ¶ 8 (1985). Accord In the Matter of Amendment of Section 73.242 of the Commission's Rules and Regulations in Regard to AM-FM Program Duplication, Report and Order, MM Docket No. 85-357, 103 F.C.C.2d 922, at ¶¶ 9-10 (1986).

## **II. The Commission Should Implement Its Proposal To Allocate New Spectrum for Digital Radio**

In 1999, in the Notice of Proposed Rulemaking that launched the instant proceeding, the Commission recognized "it may be possible" to use a portion of the television spectrum for digital radio and specifically requested comment on whether the six megahertz of spectrum at 82-88 MHz, currently used for television channel 6, could be reallocated to DAB service.<sup>18</sup> As NPR noted in response, demand for radio broadcast facilities has long exceeded the currently allocated spectrum.<sup>19</sup> Despite the Commission's efforts to increase the number of radio broadcast stations through the establishment of additional classes of radio broadcast facilities,<sup>20</sup> the demand for radio broadcast facilities has continued to outpace available spectrum.<sup>21</sup>

Beyond addressing the demand for radio broadcast spectrum, reallocating the 82-88 MHz spectrum as part of the digital transition is appropriate for other reasons. As an initial matter, even if the Commission approves the iBiquity IBOC FM system, it is

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<sup>18</sup> DAB NPRM at ¶¶ 40-41.

<sup>19</sup> NPR Comments at 7-8. See also Modification of FM Broadcast Station Rules to Increase the Availability of Commercial FM Broadcast Assignments, 94 F.C.C.2d 152, 153 (1983) (concluding that, "under the [then] present allotment rules, additional service cannot be offered to many parts of the nation where demand has not been satisfied.").

<sup>20</sup> See Modification of FM Broadcast Station Rules to Increase the Availability of Commercial FM Broadcast Assignments, 94 F.C.C.2d 152, 153 (1983).

<sup>21</sup> See Conflict Between Applications and Petitions for Rulemaking to Amend the FM Table of Allotments, 7 FCC Rcd. 4917, 4919 (1992) (noting "the significant increase in the number of FM stations and the accompanying congestion in the FM band that has occurred since the formation of the FM Table of Allotments in 1964."); In the Matter of Creation of a Low Power Radio Service, Notice of Proposed Rulemaking, MM Docket No. 99-25; RM-9208; RM-9242, 14 FCC Rcd 2471, at ¶ 11, rel. Feb. 3, 1999 (noting that "the Commission received over 13,000 inquiries in the last year from individuals and groups showing an interest in starting a low power radio station.").

unclear whether IBOC will succeed as quickly as its proponents hope or at all. Indeed, some commenters remain skeptical of the ultimate prospects for IBOC's success.<sup>22</sup> Since IBOC may not succeed in the marketplace, the allocation of new spectrum for digital radio may prove to be the only means of establishing a digital radio service.

Assuming the success or failure of IBOC will be determined over the course of a number of years, the Commission might also use the allocation of new spectrum to promote the adoption of IBOC. Indeed, all digital IBOC stations in the 82-88 MHz spectrum could provide an ideal spawning ground for broadcast innovators in securing the advantages of digital radio by taking advantage of over 300 kb/s of digital throughput in an all digital slice of spectrum.<sup>23</sup> Early adopting consumers of these services could also help catalyze demand for digital radio services generally.<sup>24</sup>

Finally, the Commission might use the allocation of new spectrum to promote any number of new public services that are now difficult to deploy because of the lack of common frequencies across a broad geographic area. As an example, the Commission

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<sup>22</sup> See, e.g., Pizzi, "What's Wrong with DAB," Broadcast Engineering, September 2000.

<sup>23</sup> For instance, over 240 million surround decoders have been sold incorporating Dolby Surround decoders. According to Dolby Laboratories, DVD sales incorporating surround decoders, the fastest growing consumer electronics product ever, have reached a combined 133 million units between computer and stand alone playback sales. [www.dolby.com/stats/](http://www.dolby.com/stats/). The Consumer Electronics Association predicts that DVD household penetration will exceed 174 million households by 2004. Surround Professional at 26 (Nov/Dec 2001). With over a thousand music titles available in Surround, and Surround audio now appearing in vehicles, it appears consumers are increasingly expecting their audio listening to be in the surround format.

<sup>24</sup> While the very first consumer electronics receivers are unlikely to exploit the full capabilities of an all-digital signal, the promise of all-digital stations should spur the development and introduction of all-digital receivers.

might dedicate a particular slice of spectrum in the 82-88 MHz spectrum to public safety services, such as traveler information services.<sup>25</sup> The Commission might also dedicate a particular channel to narrowcast services, such as event-related broadcasts.<sup>26</sup> The Commission has, in the past, reallocated TV channels to satisfy just such public interest needs, although on a smaller scale.<sup>27</sup>

Accordingly, we think the public interest clearly supports the reallocation of the 82-88 MHz spectrum to radio.

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<sup>25</sup> While the Commission authorized the use of low power FM stations to provide such services, In the Matter of Creation of Low Power Service, Report and Order, MM Docket No. 99-25, 15 FCC Rcd. 2205 (2000), the lack of available spectrum on a common frequency poses a substantial obstacle to actually implementing such a service. See also Petition to Authorize the Transmission of Emergency Signals on Channel 200, RM-9719 (filed Aug. 2, 1999).

<sup>26</sup> See Petition to Establish Event Broadcasting Stations, RM-9246 (filed June 24, 1996).

<sup>27</sup> In the Matter of Amendment of Parts 2, 73, and 90 of the Commission's Rules and Regulations to Allocate Additional Channels in the Band 470 - 512 MHz for Public Safety and Other Land Mobile Services, GEN Docket 84-902, 1986 FCC LEXIS 4127; 59 Rad. Reg. 2d 910 (1986).

### **Conclusion**

NPR strongly supports the Commission's efforts to facilitate the transition to digital radio broadcasting, including through the allocation of additional spectrum, and urges the adoption of appropriate measures consistent with the foregoing comments.

Respectfully submitted,

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